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ABSTRACTS

Third Conference on Rice Utilization

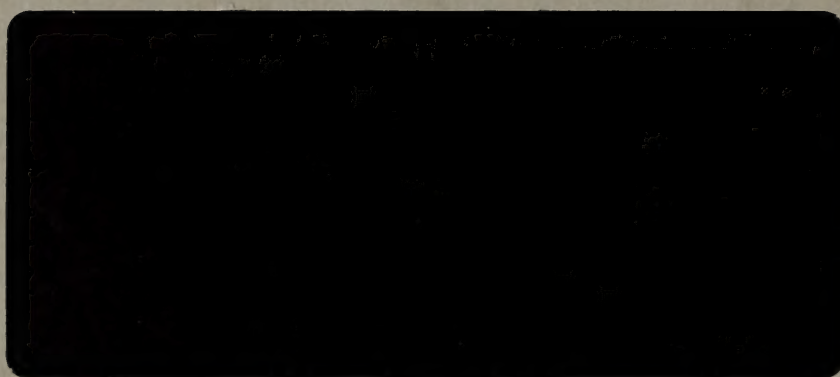
March 18 and 19, 1963

Southern Utilization Research & Development Division

Agricultural Research Service

U. S. DEPARTMENT OF AGRICULTURE

1100 Robert E. Lee Blvd.
New Orleans, Louisiana



THIRD CONFERENCE ON RICE UTILIZATION

New Orleans, Louisiana

ABSTRACTS

REPORT CHAIRMAN

Third Conference on Rice Utilization

March 18 and 19, 1963

GENERAL CHAIRMAN

This report summarizes the discussions of the various speakers during the conference. If further details regarding any particular subject are desired, they may be obtained by communicating with the person concerned.

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REPORT CHAIRMAN

L. V. Harrison, Jr.

C. H. Fisher, Director

Southern Utilization Research and Development Division

DR. A. E. FISHER

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

SWAMPY UTILIZATION RESEARCH AND DEVELOPMENT DIVISION

THIRD CONFERENCE ON RICE UTILIZATION

Third Conference on Rice Utilization

New Orleans, Louisiana

March 18-19, 1963

PROGRAM

Conference Room - Third Floor

Monday, March 18, 1963

HONORARY CHAIRMAN

9:00 A.M. Registration

George B. Blair

9:30 A.M. Introduction

E. L. Patton

Assistant Director, SR

10:00 A.M.

C. E. Fisher

Director, SR

10:30 A.M.

GENERAL CHAIRMAN

E. L. Patton

1:00 P.M. Luncheon

1:30 P.M. E. C. McMillan, President, Rice Council for Market Dev.,
Houston, Texas

2:00 P.M. Special Way of Making Quiche

COCHAIRMAN

L. W. Mazzeno, Jr.

2:30 P.M. Process and Utilization of Rice Hulls
as Cattle Feed and Fertilizer

3:00 P.M. Feed for Rice Products

3:30 P.M. Market Development of

CONFERENCE COORDINATOR

Bea A. Sharar

12:30 P.M. Luncheon

Kenneth F. Froehner

Wheat Growers, Inc.

Houston, Texas

Marvin L. Lathrop

Delta Industries, Inc.

Houston, Texas

Claybourne B. Ross

Rice Council for Market Dev.

Houston, Texas

Jim Washburn

J. Walter Thompson Company

Chicago, Illinois

THIRD CONFERENCE ON RICE UTILIZATION

New Orleans, Louisiana

HONORARY CHAIRMAN

George S. Blair

GENERAL CHAIRMAN

H. L. Patton

COCHAIRMAN

L. W. Mearns, Jr.

CONFERENCE COORDINATOR

Joe A. Blaser

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
SOUTHERN UTILIZATION RESEARCH AND DEVELOPMENT DIVISION

Third Conference on Rice Utilization

March 18-19, 1963

PROGRAM

Conference Room - Third Floor
Monday, March 18, 1963

9:00 A.M. Registration

9:30 A.M. Introduction

E. L. Patton
Assistant Director, SU

Welcome

C. H. Fisher
Director, SU

Opening Remarks

George B. Blair
Chairman, Rice RMA Comm.
Gen.Mgr., American Rice Growers
Lake Charles, Louisiana

I. NEW PRODUCTS

Presiding: E. C. McWilliams, President, Rice Council for Market Dev.,
Houston, Texas

A Novel Way of Making Quick-Cooking
Rice

Kenneth K. Keneaster
Uncle Ben's, Inc.
Houston, Texas

Process and Utilization of Rice Hulls
as Cattle Feed and Fertilizer

Marvin L. DeWoody
Delta Industries, Inc.
Houston, Texas

Need for New Rice Products

Claybourne B. Ross
Rice Council for Market Dev.
Houston, Texas

Market Development of a Staple Food

Don Washburn
J. Walter Thompson Company
Chicago, Illinois

12:30 P.M. Luncheon

1:30 P.M., Monday, March 18, 1963

II. UTILIZATION RESEARCH

Presiding: Gordon E. Dore', President, Rice Millers' Association,
Crowley, Louisiana

Progress Report on Rice Utilization
Research at SU

Joseph T. Hogan
Food Crops Lab., SU

Progress Report on Rice Utilization
Research at WU

David F. Houston
Cereals Lab., WU

Cereals Research at NU

H. M. Teeter
Assistant Director, NU

Wheat Research at WU

Amon H. Brown
Assistant Director, WU

Low Moisture Milling

Joseph Pominski
Eng. & Dev. Lab., SU

9:30 A.M., Tuesday, March 19, 1963

III. MARKETING AND THE FOREIGN SITUATION

Presiding: Marcus Mauritz, President, U. S. Rice Export Dev. Assn., Inc.
Ganado, Texas

Domestic Market for Rice

Marshall E. Miller
Econ. Res. Serv., USDA
Washington, D. C.

Objective Methods of Measuring Rice
Quality and Degree of Milling

Harry W. Schroeder
Agric. Marketing Serv., USDA
College Station, Texas

How the Common Market in Europe May
Affect the American Rice Industry

Dexter V. Rivenburgh
Foreign Agric. Serv., USDA
Washington, D. C.

Adjournment

Tour of Research Facilities - Southern Utilization Research and
Development Division

A NOVEL WAY OF MAKING QUICK-COOKING RICE

by

Kenneth K. Keneaster

Uncle Ben's, Inc.

Post Office Box 1752

Houston 1, Texas

A method of producing quick-cooking rice is described comprising the following steps: (1) Steeping in water to a point approaching saturation, (2) Cooking in water, (3) Cooling rapidly with water or air to stop cooking action, (4) Freezing slowly so that large ice crystals are formed which disrupt the cell structure, (5) Thawing and, (6) Drying. The finished product has a snowy white, very fine porous structure which rapidly absorbs water when recooked by the housewife.

There have been many methods proposed for rendering rice quicker cooking. Only one method, and modifications thereof, has been successfully commercially exploited in this country. You all, of course, are quite familiar with the product and process of our friends at General Foods.

I am at liberty to reveal only information that is already published in the patent literature. Most of the published and patented processes involve the use of relatively high temperatures at one stage or another to impart porosity to the grain and thus cause it to soak up water more rapidly than unprocessed rice. The process which I shall describe briefly to you, on the other hand, involves the use of temperatures below freezing in order to impart the desired porous structure.

The process generally speaking comprises four or five steps as follows:

1. The rice is steeped in water to a point approaching saturation. (This step is optional.)
2. The steeped rice is cooked in water.
3. The cooked rice is cooled and frozen slowly.
4. The frozen rice is thawed.
5. The thawed rice is dried.

Now let us look at each of these steps:

1. Steeping--The rice may be steeped in water at any temperature from room temperature or below up to slightly below its gelatinization temperature. In general, the higher the steeping temperature, the shorter the time required. The steeping process tends to produce a slightly smoother and higher quality product than if it is eliminated. Nevertheless, a highly satisfactory product can be made without the use of the steeping step.

2. Cooking--The rice may be cooked at any temperature above its gelatinization temperature and, of course, the higher the cooking temperature, the shorter the cooking time required to obtain a given degree of cooking. The rice may be cooked at temperatures above 212° F. by using pressure vessels if desired. Cooking should be carefully controlled in order to insure uniformity in the finished product.
3. Cooling and Freezing--The cooked rice should be cooled rapidly with air or water in order to stop the cooking action and then frozen slowly in order to induce large ice crystals to grow and disrupt the cell structure. The cooked rice should ordinarily remain in the freezing plateau at least one hour before thawing.
4. Thawing--The frozen rice may be thawed by any convenient means but care must be taken not to use excessive temperatures which may vitrify the rice upon subsequent drying.
5. Drying--The rate of drying is not critical in this process and may be varied over quite a wide range of temperatures and air flow rates. Excessively high temperatures are avoided to prevent scorching.

The finished product made by this process is snowy white with a delicate honeycomb porosity throughout the grain which permits the rapid absorption of water when cooked by the housewife. The grains are well-shaped and present a fluffy large-kernel separate grain appearance. The texture and flavor are outstandingly excellent.

The properties of the finished product can be varied over a wide range by choosing appropriate starting material, steeping and cooking conditions and freezing conditions.

NEED FOR NEW RICE PRODUCTS

by

Claybourne B. Ross
Rice Council for Market Development
Post Office Box 22802
Houston 27, Texas

As a preface to my remarks on the topic, "Need for New Rice Products", I wish to salute the research workers for the job that they have done in the area of rice production research. In the past 10 years, their accomplishments have had a profound effect upon the production of rice. The accomplishments have contributed emphasis to the need for an expanded program of marketing, production distribution, and utilization research.

Today, the total production of rice in the United States is at a peak. At the same time, the average yield per acre is the highest known. New rice products is a challenge in the marketing and disposal of our rice crop. New rice products for the consumers may be classified into three categories:

(1) The convenience combination product is one where all of the ingredients for a rice dish are included in one package. Several of these products are already on the retailer's shelf.

(2) Manufactured product using rice --- This is in the area of food manufacturing or processing. The challenge is to develop products in which rice is included in the manufacture of the products. To give you an example, let's think of a food consisting of rice, non-fat dry milk, and sugar to which various flavors may be added. This food could be used and sold as a basis for "shakes", ice creams, and sherberts. It would be a product that would be high in energy, high in protein, low in fat, and economical in cost. It might be sold as an energy food for teenagers and as a low-fat diet food for adults.

(3) Canned rice dishes is a category that may include the complete dish in a can, such as, Chicken and Rice, Beef and Rice, Rice Pilaf, Rice Dressing, and others. The poultry industry in Arkansas and Virginia has asked for the recipe and/or technique of how they might can chicken and rice dishes. The answer is not available. A few of the poultry processors have undertaken to can this dish by trial and error. Their experiences, thus far, have been very disappointing.

As researchers view these problems they should keep three criteria in mind: (a) a product that would be of common use; (b) a product that is wanted; and (c) a product of good value.

MARKET DEVELOPMENT OF A STAPLE FOOD

by

Don Washburn

J. Walter Thompson Company

410 North Michigan Avenue

Chicago 11, Illinois

The scope of marketing techniques for rice in the next 5 to 10 years will bring about an intensified, growing need for cooperation between growers and rice mills in certain areas of marketing. One of these is consumer marketing which encompasses advertising, public relations, and sales promotion. Product improvement and new product development provide another important facet of consumer marketing.

The common interest of all of us--rice growers, rice research specialists, marketing men, and advertising and public relations agency--is to find new ways to market rice effectively with wide consumer acceptance.

To insure the continuous prosperity of our economy, it is important that basic segments of agriculture be healthy. Agricultural products must be exposed to consumers and advertised just as other items used by the public. This belief motivated J. Walter Thompson Company to become associated with the rice industry some four years ago.

I would like to review the directions our hard-hitting promotional campaign took in the four years and the accomplishments realized.

At the beginning the men responsible for the formulation of the industry program, both growers and millers, realized that rice had strong competition from other foods and had to be promoted vigorously to get its share of the consumer food dollar. Also, with increased production through bigger yields, the industry faced a problem of surplus supplies of rice. In the meantime, the more prosperous consumer was turning from rice, a staple food, to more expensive foods.

Thus, the increase in consumers' discretionary spending--a continuing and accelerating trend--was fast becoming an unfavorable marketing factor for rice consumption. Industry leaders had not only to win back the straying customer, but also to win new families for rice.

It was realized that the rice industry had an unequalled opportunity to increase rice consumption by 60 per cent in 10 years through aggressive marketing.

A program of mass communication was formulated, a program that would reach millions of consumers at low cost per person. National advertising in magazines, augmented by national product publicity and sales promotion activities were undertaken.

The national marketing program served to complement and supplement local rice mill advertising, so that a double impression could be made on the consumer to guide her decision in favor of rice at the local food store.

In addition to advertising aimed at the consumer market, a food service industry advertising campaign was conducted. Both have met with a high degree of acceptance.

Here are the accomplishments of the campaigns in the last four years:

The combined efforts of the Rice Council and the rice mills have increased retail sales of rice about 12-1/2 million dollars, or 15 per cent, and a sharp rise continues. Per capita consumption has grown about 23 per cent, or about 1.2 pounds.

Although great progress has been made, to obtain the 60 per cent increase in consumption the industry has the opportunity to achieve will take greater industry effort in the next four years.

PROGRESS REPORT ON RICE UTILIZATION RESEARCH AT SU

by

Joseph T. Hogan

Food Crops Laboratory

Southern Utilization Research and Development Division

Recent investigations of the chemical and physical changes accompany the aging of rough rice stored at both ambient (ca. 77° F.) and 40° F. indicate that although the gross chemical composition of the rices did not significantly change, the physical characteristics of the grain exhibited progressive changes leading to an improvement in culinary and organoleptic properties of the rice. Inasmuch as the aging process affects the processing characteristics of rice leading to the maintenance or enhancement of cooking, textural and nutritive qualities, this aspect of rice research has continued to be pursued in the current research program at the Southern Utilization Research and Development Division. Objectives of the investigation are concerned with identifying the causative agent(s) which brings about such changes and the establishment of a knowledge of the mechanism(s) whereby these changes occur for the purpose of accelerating and/or controlling such changes to effect desirable characteristics in the rice kernel.

The nature of the physical changes, such as hydration, loss of solids, pasting characteristics, cohesiveness, etc., has been established and confirmed for the aging process. A definite pattern of native amylase activity, both alpha- and beta-, has been found for rice aged over a 10-month period. This is being verified in our present season's investigations. In addition, susceptibility of the rice starch to alpha- and beta-amylases shows a definite trend with age over the same period of aging. Rice starch isolated from freshly-harvested and aged rices has been characterized by physical measurements, such as solubility, intrinsic viscosity, and amylase susceptibility. These data are presently being examined for correlation with observed physical characteristics of the rices.

Observations resulting from a study of the aging process and previous investigations of heat-vacuum treatments of rice have led to the development of a method of effecting changes in freshly-harvested rice which bear striking similarities to those found in aged rice. In brief, the method consists of heating rough or white milled rice of 12-13 per cent moisture content in a closed container at temperatures between 90°-110° C. for 3 to 8 hours under controlled conditions which prevent loss of moisture from the grains. Characteristics of the treated rice resemble those of rice which has been aged for a period of 10 months or longer. The product has the hydration properties and pasting characteristics of an untreated aged rice and cooks to a white, dry, fluffy consistency. A patent has been filed covering this development.

In accordance with the request of the Rice Research and Marketing Committee, library research has been initiated for the purpose of compiling information, both foreign and domestic, on the chemical and physical properties of rice. This consists of a thorough review, analysis, and compilation of existing information on rice composition and structure, which will provide the background for other advances and guide future studies into areas of presently inadequate knowledge of these basic properties and their potentials.

PROGRESS REPORT ON RICE UTILIZATION RESEARCH AT WU

by

David F. Houston

Cereals Laboratory

Western Utilization Research and Development Division

800 Buchanan Street

Albany 10, California

Rice research at the Western Utilization Research and Development Division is reported under four classifications which illustrate the work in progress on both fundamental and applied problems:

1. Production of high-protein rice flour. Rices grown with heavy fertilization with nitrogen yielded a milled product with about 10% protein. Fine-grinding and air-classification of flour from these rices provided an 8% fraction with 16-17% protein or 13-14% with 14.5% protein. These fractions, useful for high-protein cereal milks or porridges, have properties differing widely from those of the total flours. Investigation of the differences is being made.

2. Rice proteins. Isolation and characterization of these nutritionally important compounds has been started, with major emphasis on the globulin fraction. The surprising discovery of a 3% sulfur content in this fraction suggests the presence of a β -globulin, previously found among cereals only in barley. In contrast, the glutelins contain only about a half percent of sulfur. Purifications and characterizations are being continued.

3. Coating materials for rice. Modifications are being sought for the present methods of providing a high luster on white rice and for enrichment. The aim of the lustering tests is to replace the questionable use of talc in coating. Substitution of fatty compounds is being explored, and a suitable objective measurement of luster is being sought. New enriching coatings seem necessary to allow inclusion of the specified yellow riboflavin in the enrichment mixture. Tests are presently in progress on enriching the total rice with powdered ingredients and protecting them with coatings of starchy materials.

4. Changes in rice during parboiling. Progressive decreases of flour paste viscosity were found with increasing gelatinization of the starch during parboiling. Conclusions have been drawn that rate of gelatinization was governed by water uptake during soaking, but degree of gelatinization was controlled by the extent of steaming.

CEREALS RESEARCH AT NU

by

H. M. Teeter

Assistant Director

Northern Utilization Research and Development Division

1815 North University Street

Peoria 5, Illinois

Cereals research at the Northern Utilization Research and Development Division emphasizes the development of new industrial uses for wheat, corn, sorghum, and their components. Of greatest significance to those concerned with utilization of rice is the research on chemical and fermentative products from grains.

Cereal xanthates, obtained by treating materials like starch, flour, wheat bran, or ground whole wheat with inexpensive chemicals, are promising new products for use in the pulp and paper industry. When mixed with a suspension of wood pulp and oxidized with chlorine, cereal xanthate is converted to insoluble, crosslinked xanthide and simultaneously coupled to the pulp. Many important properties of paper made from xanthide-pulp combinations are improved, in comparison to those of conventional paper, even when xanthide is present in amounts up to 50% of the pulp.

Other new chemical products from starch and flour include dialdehyde starch, acid-modified flour, and sulfated flour. Dialdehyde starch, now made commercially, is an oxidized starch that imparts wet-strength to paper and may also find use in adhesives and paper coatings. Acid-modified flour is a promising paper size. Sulfated flour is under study because dilute solutions have high viscosity and exceptional clarity.

By fermentative methods, unusual products can be made from grain. Thus, corn sugar can be converted by microbial action to a series of polysaccharide gums whose solutions have valuable viscosity characteristics. Four companies recently undertook production of one of these gums. In another process now being evaluated by industry, grain-based media are fermented to high yields of β -carotene. This substance, a precursor to vitamin A, has potential for fortifying animal and poultry feeds and, in purified condition, as a food colorant.

A vigorous program of fundamental research on the composition of cereal grains and the chemical and physical properties of their components is maintained to provide the basis for new processes and products for future development.

WHEAT RESEARCH AT WU

by

Amon H. Brown

Assistant Director

Western Utilization Research and Development Division

800 Buchanan Street

Albany 10, California

This paper will discuss only those parts of the wheat research program at the Western Utilization Research and Development Division that are closely related to rice. The manufacture of bulgur (parboiled wheat), the nutritive characteristics of the product, and its versatility in cookery will be outlined. The bulgur wafer, developed as a shelter ration for the Office of Civil Defense, will also be described. Another phase of the research program is concerned with the peeling and bleaching of wheat to make a product that has some similarity to rice. Progress on this aspect will be reported.

LOW MOISTURE MILLING

by

Joseph Pominski

Engineering and Development Laboratory

Southern Utilization Research and Development Division

Low moisture milling of rice offers the possibility of substantial increases in head yields. In this report the past work on low moisture milling of rice will be reviewed and recommendations will be made for continued effort in this field. These investigations have been and will probably continue to fall into the categories of basic, utilization and production research; each overlapping the other with no clear cut lines of demarkation as often happens in this type work.

Review: Laboratory tests conducted on Bluebonnet rice, a Southern grown variety, for a moisture range of 10-14% show increases of approximately 3.0% head yield and approximately 0.7% total yield for each 1% decrease in moisture. For a short grain rice grown in California, laboratory tests for the same moisture range showed a head yield increase of 1.8% and a total yield increase of 1.2% for each 1% decrease in moisture. Other bench scale tests indicated that the low moisture rice could be remoistened with humidified air with no adverse effects on the rice.

Laboratory milling tests on a lot of short grain rice immediately after drying show a substantial increase in head yield over rice milled after moisture equilibration.

Limited plant scale work on milling both short and long grain rice was neither satisfactory nor conclusive. For the short grain rice, the head yields were increased but these results were unsatisfactory because of moisture losses resulting in a decrease in value for the rice. However, remoistening the rice would have increased its original value. For the long grain rice high drying temperatures were used at the lower moisture levels. These temperatures may have decreased the gain in head yields. Here again remoistening the over-dried product would also have increased its original value.

Research work by Spanish workers conducted under a Public Law 480 research project which is sponsored by Agricultural Marketing Service shows that there is a non-uniform distribution of protein in cooked rice.

Recommendations:

(1) Additional Laboratory studies should be conducted on long grain and medium grain rice to investigate the effect of time lag between drying and milling. A proper selection of conditions may give an increase in head and total yield with no need for a remoistening of dried rice. For example, perhaps rice could be dried to an average kernel moisture of 12.5% and immediately milled with no time lag. The outside of the kernel would probably be at about 10 or 11%. After milling and equilibration the moisture would still be 12.5%.

- (2) Conduct plant scale experiments on optimum conditions determined in recommendation (1).
- (3) Conduct plant scale milling tests on low moisture (equilibrated) rice and equilibrate the rice back with moist air to its normal moisture content. Successful results here and in recommendation (2) would increase the potential value of milled rice by millions of dollars.
- (4) Develop and apply objective tests to determine the degree of milling.
- (5) Work to confirm non-uniform distribution of protein should be initiated and the possible influence of these findings correlated with low moisture milling.

OBJECTIVE METHODS OF MEASURING RICE QUALITY
AND DEGREE OF MILLING

by

Harry W. Schroeder
Agricultural Marketing Service, USDA
Market Quality Research Division
Field Crops and Animal Products Branch
Plant Sciences Department
College Station, Texas

Basic studies on the constituents of rice that influence quality have been instituted in Spain under the direction of Dr. E. Primo. The goal of the project (contract research supported by P. L. 480 funds) is to develop objective methods for measuring market quality of raw and precooked rice.

American and Spanish rice varieties have been investigated. Optimum cooking time for each variety has been determined and panel tests conducted to rate the varieties by preference and cohesiveness. A highly significant correlation between these factors was demonstrated. Of various previously reported physico-chemical properties of rice, only the paste viscosity of cooked rice was significantly correlated with panel preference.

It was shown that protein distribution is heterogeneous in the rice endosperm. It is not the same for every variety, but a general pattern seems to exist. A thin discontinuous outer layer of cooked rice was separated from a translucent inner layer. The outer layer of each variety had a higher protein content than the inner layer. The protein content of the outer layer was shown to be positively correlated with panel preference. The percent of nitrogen in raw rice was also shown to be related to quality.

A photometer has been developed to measure the degree of milling of rice. The instrument measures the ratio of transmission through a sample of milled rice (approximately 100 g) at the wavelengths of 850 mμ and 660 mμ. This ratio was highly significantly correlated with the percent surface lipids on milled rice and with rice inspectors' visual judgment of degree of milling.

HOW THE COMMON MARKET IN EUROPE MAY AFFECT
THE AMERICAN RICE INDUSTRY

by

Dexter V. Rivenburgh
Grain and Feed Division
Foreign Agricultural Service, USDA
Washington, D. C.

Italy and France produce only the soft cooking types of rice which have only limited consumer acceptance in the other four non-rice-producing countries of the Common Market. Expansion of rice acreages can be expected to be limited by decreased farm labor supplies, more profitable returns from livestock and other farm enterprises, and to some extent a lack of available land with subsoil conditions favorable to rice. To maintain current levels of production, the price support system in Italy returns 3 to 11 percent more to the farmers than is the case in the U. S. for comparable varieties. Support prices in France are from 30 to 65 percent higher than the U. S.

The Common Market regulations, while not as yet agreed on, are based on the premise that the production of rice in Italy and France plus free imports from associated territories, would be sufficient to meet consumption requirements of the Common Market. It has been proposed in order to afford their own production sufficient protection by severely curtailing imports, that a common price for rice be established within the area at whatever level is considered appropriate to maintain desired production. To this price would be added certain processing margins, preference factors and location differentials from the point of production to the farthest area of deficit within the Community. The resultant figure would become the threshold price and the variable levy which would have to be paid on licensed imports would be the difference between the threshold and the lowest world price.

The resultant variable levy to be paid by the importer would be extremely high and would raise the retail price to consumers from 30 to 50 percent. Under such a situation, imports of U. S. rice would materially decline for what is now our best quality market for dollar sales. The major portion of traditional rice imports have been of types of rice not grown in the Community. As a result such a restrictive policy would result in an abrupt decline in consumption.

The situation as far as U. S. rice is concerned, depends on what compromises are made in the final regulations. Continued access to the market will require that such compromises are based on realistic producer prices, to which only limited additions are made in the form of location differentials. If the levy formula used can keep down the threshold price, then some protection will be afforded the local rice grower while at the same time preventing the elimination of imports. Furthermore, there will have to be a decision regarding types of rice not produced within the Community to enable trade to move freely under a reasonable duty.

BIOGRAPHICAL SKETCH

George B. Blair

Mr. Blair is a graduate of Texas A. & M. College, majoring in economics. He was formerly secretary of the Texas Federation of Farm Cooperatives.

Since 1952 he has served as Secretary and General Manager of the American Rice Growers Cooperative Association. He served as president of the National Council of Farmer Cooperatives during 1958 and 1959. Mr. Blair was a member of the Secretary Special Foreign Agricultural Trade Mission visiting the South American Countries. During the fall of 1957, he served as a member of a U. S. Mission which made an intensive study of rice market conditions in Asia.

Mr. Blair was appointed to the Rice Research and Marketing Advisory Committee in 1955, and is presently chairman of this group.

Amon H. Brown

Mr. Brown, a native of Idaho, received his first degree from the University of California at Los Angeles, graduating in chemistry. Jobs were tough to find and pay was poor, so he followed his earlier inclinations and went to the University of Washington where he received both the B.S. and M.S. degrees in chemical engineering. He immediately went to the Western Utilization Research and Development Division and has been there ever since.

His own engineering studies were concerned with dehydration of foods, both in piece form and in liquid form, and with heat processing of fluid foods, including concentration, essence stripping, pasteurization and sterilization. During 16 years with the Engineering and Development Laboratory, he served six years as Head of Process Development Investigations and four years as Assistant Chief of the Laboratory. He was then assigned to assist in the expansion of the Wool and Mohair program at the Western Laboratory.

He was responsible for planning and installing their recently-established Wool Processing Laboratory and for getting its research program underway. WURLAN, an excellent process for making wool fabrics machine-washable, was developed under his direction. He was then assigned to the Director's Office at the Western Laboratory where he is now Assistant Director for Industrial Development.

MEMORANDUM

1945

TO : THE SECRETARY OF THE ARMY

FROM : THE CHIEF OF STAFF

SUBJECT: [Illegible]

1945

[Illegible text block]

[Illegible text block]

[Illegible text block]

BIOGRAPHICAL SKETCH

Joseph T. Hogan

Mr. Joseph T. Hogan is a chemical engineer with the Rice and Sweetpotato Investigations, Food Crops Laboratory, Southern Utilization Research and Development Division. He is presently project leader of the Rice Research program of that Laboratory.

Mr. Hogan received his training in chemistry and chemical engineering at Tulane and Loyola University, where he received his bachelor of science degree. He has been a member of the Southern Laboratory since its beginning in 1941. He is a member of the American Institute of Chemical Engineers, Institute of Food Technologists, Scientific Research Society of America, and Phi Tau Sigma.

His research, publications, and patents over the years have dealt with sweetpotatoes, starch, industrial utilization of vegetable proteins, and rice and its by-products.

David F. Houston

Dr. Houston is a native of Minnesota. He has received the following degrees: A.B., 1927, Carleton College; M.S., 1932, George Washington University; Ph.D., 1938, University of Maryland.

He was employed at the National Bureau of Standards, Washington, D. C. in 1928 where he remained until 1940. He transferred to the Western Utilization Research and Development Division in 1940 where he is now employed as a research chemist.

His investigations have included organic dyes and medicinals, fats and oils. In 1949 his interest was directed to research on rice composition, storage, and utilization, and since 1959 on wheat lipid composition. He furnishes abstracts to the Rice Journal.

BIOGRAPHICAL SKETCH

Kenneth K. Keneaster

Mr. Keneaster obtained a B.Sci. in Chemical Engineering at Rice Institute in 1941.

He has had seventeen years' experience with Uncle Ben's Rice in various jobs as Chemist, Food Technologist, Quality Control Manager, and is now Director of Product Research and Development.

He is a member, American Chemical Society, Institute of Food Technologists, American Association of Cereal Chemists, American Society for Quality Control, Rice Research Marketing & Advisory Committee; Past Chairman and Secretary, Texas Section Institute of Food Technologists; Chairman, Rice Millers' Association Research Committee; Chairman, Committee for Advancement of Rice Research.

Marshall E. Miller

Mr. Miller is a native of Louisiana, having grown up on a farm near Alexandria. He attended Louisiana State University and received degrees in agricultural economics at that University.

After spending two years on the faculty following graduation, he joined the staff of the U. S. Department of Agriculture in 1950. His work in the Department has mainly dealt with marketing economics problems of a number of agricultural products. His current position is Chief, Market Potentials Branch, Economic Research Service, where he directs a program of research in cooperation with utilization research on economics of new products and new uses.

While at Louisiana State University and with the Department he has authored or supervised the preparation of many marketing research publications.

BIOGRAPHICAL SKETCH

E. C. McWilliams

Mr. McWilliams is General Manager and Executive Vice President of Blue Ribbon Rice Mills, Inc., Houston, Texas.

McWilliams, a 25-year veteran of the rice industry, joined Blue Ribbon Rice Mills, Inc. in 1954 as General Manager. His background includes 10 years at Pritchard Rice Mill and 6 years at Comet Rice Mills.

He has served on the Rice Council's Board of Directors since it was organized in 1957 and was elected president of the Rice Council for Market Development on January 3, 1963 by its board of directors.

McWilliams is a native of Houston, Texas. He is a member of the Houston Club, Braeburn Country Club, Bethany Methodist Church and a former director and now representative member of the Rice Millers Association.

Joseph Pominski

Mr. Pominski is a native of Louisiana. He attended Louisiana State University, graduating with a B.S. in Chemical Engineering in 1935.

He has been employed for 22 years at the Southern Utilization Research and Development Division in the Engineering and Development Laboratory conducting chemical engineering research on product and process development relative to agricultural materials, including rice, sweet-potatoes, vegetable oils, peanut protein, rice wax, and defatted peanuts.

Pominski is a member of the following societies: American Institute of Chemical Engineers, American Chemical Society, American Oil Chemists' Society, American Institute of Chemists, National Society of Professional Engineers, Louisiana Engineering Society, and Scientific Research Society of America. He is a Registered Professional Engineer in Louisiana.

BIOGRAPHICAL SKETCH

Dexter V. Rivenburgh

Mr. Rivenburgh is a member of a family directly identified with agriculture for over 300 years in the Hudson River Valley section of New York State.

He obtained his education at Cornell University, and is a Veteran of World War I.

Rivenburgh was first employed by the Department of Agriculture in 1921 and has completed 42 years of service, of which the last 20 have been in the field of rice.

During World War II he was associated with the Combined Food Board and with its successor agency, the International Emergency Food Council in connection with international allocations of rice (1945-49) and with U. S. domestic allocations for the same period.

Served as Secretary of the U. S. Rice Allocation Committee during the export controls on rice during the Korean War from 1950-53.

He transferred to the Foreign Agricultural Service at the time of its reorganization in 1953 as a Rice Marketing Specialist and has held this position since that date.

In the field of foreign service, in addition to many phases of developing and extending market development in rice, he has served as U. S. delegate to 22 international meetings directly concerned with rice. These include sessions of the Singapore Consultation Rice meetings; FAO Economic Meetings; the Consultation Sub-Committee on the Economic Aspect of Rice; the International Rice Commission; Diplomatic Missions on Rice to Asia, et al.

Mr. Rivenburgh has traveled extensively through all rice areas of the world studying the problems of production, trade and processing. From these studies, many publications have been developed covering a wide range of subject matter relating to rice. For the past 2 years, the Common Market has occupied the major portion of foreign travel.

The Department of Agriculture recognized his outstanding capabilities by awarding him the Superior Service Award for "exceptional success in representing the United States interests in the world rice trade and displaying an unusual capacity as a negotiator and leader in foreign market development".

BIOGRAPHICAL SKETCH

H. W. Schroeder

Dr. Harry W. Schroeder is a native of Kansas. He received a Bachelor or Science degree with distinction from the University of Minnesota in 1951. In 1955, he was granted the degrees of Master of Science and Doctor of Philosophy in Plant Pathology from the same university.

Dr. Schroeder served with the U. S. Army Air Corps and Air Force in World War II from 1939 to 1948. He was Plant Pathologist and Chief of the Division of Plant Pathology, Instituto de Investigaciones Agrícolas, S. A. C., Republic of Mexico, in 1956-57. Since 1957, he has been employed by the Market Quality Research Division, Agricultural Marketing Service, U. S. D. A., and presently holds the position of Research Plant Pathologist with the Field Crops and Animal Products Branch. His research during this latter period has been concerned with the maintenance of quality of rough rice during post-harvest handling, conditioning, and storage.

Howard M. Teeter

Dr. Howard M. Teeter was University Scholar in Chemistry from 1937-39 and University Fellow in Chemistry from 1939-40 while working on his Ph.D. which he received from the University of Illinois in 1940. His thesis research on stereochemistry of biphenyls was under the direction of Dr. Roger Adams.

Before joining the staff of the Northern Utilization Research and Development Division in 1942, Dr. Teeter taught organic and physical chemistry at Bradley University where he obtained a B.S. degree in 1937. For several years he was head of the oil products investigations in the Oilseed Crops Laboratory where his research activities were primarily concerned with the organic chemistry of long chain fatty acids and their derivatives and with the development of new industrial uses for drying oils.

Since November 1960, Dr. Teeter has served as Assistant Director of the Northern Division of the Agricultural Research Service.

BIOGRAPHICAL SKETCH

Don Washburn

Don Washburn, an account supervisor in the Chicago office of J. Walter Thompson Company, became associated with the agency in 1955. His responsibilities include both public relations and advertising accounts.

Washburn, who has had 17 years experience in the promotion of consumer food products, travels extensively throughout the United States in behalf of clients of J. Walter Thompson, the world's largest advertising agency.

He is a native of Minnesota and attended Mankato State College, Mankato, Minn., and the University of Minnesota, where he majored in business administration and economics.

Before becoming associated with J. Walter Thompson, Washburn was assistant executive director of a large agricultural trade association dealing in the promotion of meat products. In that position he was responsible for advertising, public relations, and commercial research. He previously was a public relations consultant to a large midwest flour milling company.

Washburn was in the navy during World War II, with service in the South Pacific area. At various bases where he was stationed, he was responsible for the procurement, preparation, and serving of food to all base personnel.

Following World War II, Washburn played professional basketball and was twice selected as an All-American professional player. He also served one year as national basketball commissioner for the Veterans of Foreign Wars.

SUPPLEMENT TO ABSTRACTS

THIRD CONFERENCE ON RICE UTILIZATION

March 18-19, 1963

This supplement compiled and edited
by B. A. Sharar and M. S. Penberthy
with assistance from B. S. Ballina,
M. T. Guy and N. Williams.

Southern Utilization Research and Development Division
Agricultural Research Service
United States Department of Agriculture
New Orleans 19, Louisiana

Discussion following presentation of: "A Novel Way of Making Quick-Cooking Rice" by Kenneth K. Keneaster.

Question: What was the leaching loss in water as compared to cooling in air?

Mr. Keneaster: There is a loss in the water but it was negligible.

Question: Could this process use anything besides water, flavors for instance?

Mr. Keneaster: Flavors, broths, etc. can replace water in cooking.

Question: Does Uncle Ben's intend to market this quick-cooking rice?

Mr. Keneaster: Yes, pilot studies are underway in the Eastern section of the country.

Question: What is the cooking time of this product?

Mr. Keneaster: Five minutes is what we are working with, but by varying cooking times a truly instant product can be made.

Question: Is the texture of the cooked rice the same?

Mr. Keneaster: Yes, it's very similar to conventional parboiled rice.

Question: Is the milling yield the same?

Mr. Keneaster: You begin with already milled rice.

Question: Could this be merchandised in possibly a frozen form?

Mr. Keneaster: Yes, but you have the problem of getting to the housewife with it still frozen.

Question: What is the effect on shelf life?

Mr. Keneaster: There is no effect on the shelf life.

Question: Can this be done with regular milled rice?

Mr. Keneaster: Yes.

Discussion following presentation of: "Process and Utilization of Rice Hulls as Cattle Feed and Fertilizer" by Marvin L. DeWoody.

Question: Is this process to be licensed, or are you going to use it in plants under contract?

Mr. DeWoody: No, it won't be licensed. It will be under contract.

Question: What product will this compete with?

Mr. DeWoody: Soya bean meal, cottonseed, milo, etc. It contains 10 to 20% protein (by non-protein nitrogen).

Question: What will be the retail price for cattlemen?

Mr. DeWoody: Roughly \$33 a ton bulk, and \$38 a ton sacked.

Question: You said you removed the silica, which is about 22%. How much do you remove?

Mr. DeWoody: One hundred sixty pounds per ton, or 8%.

Discussion following presentation of: "Need for New Rice Products" by Claybourne B. Ross.

Question: What do you mean by it must have a common use?

Mr. Ross: That is widespread use. It must be used by the masses, but not necessarily ride the rocket to the moon.

Question: What was your third point?

Mr. Ross: It must be of good value economically to the consumer.

Discussion following presentation of: "Market Development of a Staple Food" by Don Washburn.

Question: Has there been any attempt to measure immediate success in sales?

Mr. Washburn: Yes, checks have been made with retail people and the effects on rice mills, etc. with very good results, particularly in Boston and Los Angeles. As a whole, the reaction was very good, although it can't be expressed in a precise dollar value.

Question: Can you see a reflection of this in areas where the rice is consumed in large quantities - such as in Chinese and Creole populations - where the population tends to eat more rice?

Mr. Washburn: We took cross sections in large and small rice consuming areas. Of course the low consumption areas gave the greatest increase in consumption but it does create favorable atmospheres for the distributors to continue the work in local rice advertising.

Discussion following presentation of: "Progress Report on Rice Utilization Research at SU" by Joseph T. Hogan.

Question: Have you tried the effect of adding fats or proteins in Brabender viscograph determinations?

Mr. Hogan: We know it does affect curves. The additions of free fatty acids affects viscosity characteristics, but not cooking quality.

Question: You are trying to accelerate aging?

Mr. Hogan: Yes, we believe we can change the fundamental properties if we know the mechanism of change.

Question: Don't you go further in changing properties, than with ordinary aging?

Mr. Hogan: Yes, I believe so, but X-ray studies indicate not too much difference.

Question: Will this heat treatment work on rough rice?

Mr. Hogan: Time of treatment is longer for rough rice.

Question: Have you measured the cooked grain size?

Mr. Hogan: It gives a larger fluffy grain.

Question: Have you tested the effect of free fatty acids on amylose?

Mr. Hogan: No, we haven't run those tests. Amylose does have an effect on the loss to cooking water.

Question: What about retrogradation of the amylose?

Mr. Hogan: It could very well be that retrogradation decreases losses to cooking water.

Question: Does the insulating effect of the hulls make heat treating rough rice impossible?

Mr. Hogan: No, it's just a prolonged process.

Question: Does this change the translucency?

Mr. Hogan: Yes, it acquires an opaqueness, but doesn't affect the appearance of the cooked product.

Question: Milled rice contains eight phenolic compounds. Could this be related to aging problems?

Mr. Hogan: Possibly, but we have not investigated this.

Question: Would you consider this a modification of parboiling?

Mr. Hogan: Yes, possibly a mild surface parboiling since there is a translocation of water to surface of the rice kernel. However, starch was not gelatinized.

Comment: Some rice aged 22 years had identical Brabender characteristics of parboiled rice. Indian scientists have compared the water relationship of rice to that of the silica gel system.

Question: Do you measure viscosity at the same dry rice solids level?

Mr. Hogan: Yes, we always take the water content into consideration.

Question: How can we predict the final characteristics of rice products?

Mr. Hogan: Resort to Brabender pasting characteristics curve.

Question: Wouldn't you expect variations with parboiled rice?

Mr. Hogan: Brabender readings give a lower curve, which has been demonstrated by research at the Western Utilization Research and Development Division.

Discussion following presentation of: "Progress Report on Rice Utilization Research at WU" by David F. Houston.

Question: Do you visualize the use of the viscograph as a routine check on parboiling?

Dr. Houston: I don't know whether it could be routine or not; the time required is somewhat long.

Question: In regard to the rices with high nitrogen, was there a different distribution of protein in the endosperm?

Dr. Houston: We haven't information on this point.

Question: Is there work being done in California on rice strains with high nitrogen content?

Dr. Houston: Our work was with fertilizers. Possibly work is being done on high nitrogen strains.

Comment: The degree of success hasn't been announced, but there is a program for development of a high nitrogen strain.

Discussion following presentation of: "Cereals Research at NU" by H. M. Teeter.

Question: Can these microbial gums be used to coat food particles with no effect from the salt?

Dr. Teeter: There would be no effect from the salt. However, no work has been done at NU on coating foods with these gums.

Question: In the flour separation studies were the particles whole grain, or was the bran left in?

Dr. Teeter: Wheat flour was 70% extraction. Corn and sorghum flours were prepared from dehulled, degermed grain.

Question: Assuming you could use these fractions of flour in food, what would the FDA require you to call them?

Dr. Teeter: Your guess is as good as mine; they are still wheat fractions.

Discussion following presentation of: "Wheat Research at WU" presented by Clyde L. Rasmussen replacing A. H. Brown, absent due to illness.

Question: What amount of bulgur is being sold?

Mr. Rasmussen: Not very much, because it is as yet available only in limited areas; in some domestic markets it is available only as an expensive gourmet item.

Question: Then presently exports are not being sold?

Mr. Rasmussen: True. It is generally given away in assistance programs, but commercial market development is getting underway and research is in progress to widen market possibilities.

Question: What's the difference between the bulgur wafer and the Nebraska wafer?

Mr. Rasmussen: The Nebraska wafer is made from flour and is baked. It is really a cracker.

Question: Do you believe there is a causitive effect between wheat consumption in the U. S. and the absence of beri-beri?

Mr. Rasmussen: There is some relation, but U. S. wheat consumption is too low for it to be a dominant factor. Enrichment of cereal foods generally with vitamins has virtually wiped out what very little beri-beri existed in this country.

Question: Do you believe rice to cause it in areas where it is present with a high rice diet?

Mr. Rasmussen: Where polished rice supplies a very large part of the diet, beri-beri is fairly common, but it can't be said that rice causes it. Rather, it is a lack of other foods.

Question: You indicated seven or eight mills produce bulgur, with no dollar market. Do they produce under contract for food for peace?

Mr. Rasmussen: Yes.

Question: Is there any molding necessary to make bulgur resemble rice?

Mr. Rasmussen: Peeled wheat is similar to rice, but no molding is necessary.

Mr. Keneaster suggested that Mr. Rasmussen could save government money by taking the rice recipes and recaption for bulgur, since most bulgur recipes appear to be simple adaptations of rice recipes.

Mr. Rasmussen added no government funds are used for marketing. The government pays \$1.75 for C.C. cooperation in rice countries.

Discussion following presentation of: "Low Moisture Milling" by Joseph Pominski.

Question: You indicated head yield increased 3% for each 1% decrease in moisture. Are you leaving bran on?

Mr. Pominski: No, it's polish.

Question: How much time elapsed between drying and milling?

Mr. Pominski: Eighteen hours.

Question: On the time differentials were one week tests given to see if there was a continual milling yield decrease?

Mr. Pominski: No.

Discussion following presentation of: "Domestic Market for Rice" by Marshall E. Miller.

Question: Will the new USDA survey take into account the shift of population - i.e., southern citizens to industrial areas in the north, rural areas to cities, etc.?

Mr. Miller: We are collecting distribution pattern by states. Known population changes may help to explain shifts that may show up in the new patterns as compared with the data collected 5 years ago.

Question: Are you acquiring figures from in-store movements?

Mr. Miller: No, retail movements.

Question: When will the new report be issued on market pattern of rice?

Mr. Miller: May.

Question: What about bulgur wheat and rice and the U. S. market?

Mr. Miller: In the midwest area, Kansas, Colorado, and Missouri, I suppose that it will have some limited success. Effect will be spread among many products such as potatoes, spaghetti, etc., but will not greatly affect these as well as rice.

Question: Does current survey include data from rice packagers and food trades?

Mr. Miller: It does include repackagers so that we wouldn't duplicate information furnished by the mills.

Discussion following presentation of: "Objective Methods of Measuring Rice Quality and Degree of Milling" by Harry W. Schroeder.

Question: Do you find that photometer readings change with time after milling?

Dr. Schroeder: Photometer readings of samples held over a three to four month period still correlate with lipid determinations and are comparable to the initial readings.

Question: Is your answer then that the time is the same?

Dr. Schroeder: Quite comparable.

Discussion following presentation of: "How the Common Market in Europe May Affect the American Rice Industry" by Dexter V. Rivenburgh.

- Question: Is there any proposed schedule on the Common Market for regulations on rice?
- Mr. Rivenburgh: A committee has been set up to study it. It will probably just be a rehash of old problems with little agreement on regulations.
- Question: Wouldn't the levy be relatively low compared to the price on our long grain brown?
- Mr. Rivenburgh: You would be paying 30% ad valorem of the landed cost which would have to be absorbed by market prices.
- Question: What is consumer preference?
- Mr. Rivenburgh: The preference of consumers in the Community is definitely toward long grain. West Germany now has over 50% long grain consumption.
- Question: On the basis of drop in consumption in Italy, will it affect the Common Market?
- Mr. Rivenburgh: No. This drop occurred early in the 1930's and from then on rice consumption has been fairly steady at high domestic price levels.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
SOUTHERN UTILIZATION RESEARCH AND DEVELOPMENT DIVISION

Third Conference on Rice Utilization

March 18-19, 1963

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